Cisco Connected Stadium Wi-Fi Services

Enhance the Mobile Fan Experience in the Venue with Cisco Connected Stadium Wi-Fi Services

Overview

The Cisco[©] Connected Stadium Wi-Fi solution is designed to help solve the problem of Wi-Fi overload and to provide fans with reliable access to their favorite applications and sites while they are at the game. The solution provides for improved coverage, improved capacity, and scalable delivery of video over wireless within a venue. This is achieved using a combination of a unique Cisco design and select Cisco products, coupled with customized planning, design, and implementation services.

- From a design perspective, the Wi-Fi network is essentially partitioned into many micro Wi-Fi cells, each supporting a given set of users. This tighter packing of micro Wi-Fi cells enables a greater number mobile data users to be supported.

- From a product perspective, the use of highly directional antennas, with down-tilt for limiting cell coverage, makes the design more efficient. The use of these antennas allows the Wi-Fi cells to reach users within the stadium bowl areas while reducing co-channel interference.

- From a service perspective, successful deployment of this solution requires a comprehensive assessment to understand the specific needs and challenges of the venue. It also requires careful planning to ensure an adequate number and correct placement of access points for proper capacity, and fine-tuning of access point channel assignment and RF-power-level controls during implementation to ensure proper coverage.

Service Offerings

Because of the variety and density of WLAN clients in the venue bowl, as well as the physical layout of most sports and entertainment venues, providing comprehensive WLAN coverage in the venue requires a well- thought-out plan to address the RF requirements, along with intricate RF tuning and detailed planning to address the potential for self -interference. The services provided by Cisco address the unique requirements and challenges of advanced applications such as StadiumVision Mobile and other forms of high density content delivery, based on comprehensive testing and proven best practices. Cisco also offers three levels of assessment, providing customers with initial cost estimates based on their general or specific needs.

Cisco Connected Stadium Wi-Fi Budgetary Assessment Service

This service includes an initial site review and general requirements-gathering for venues that are interested in the Cisco Connected Stadium Wi-Fi solution. The service can be performed remotely based on photographs, diagrams, and other information gathered from the customer or publically available on the Internet.

The goal is to gather a sufficient amount of data to create a rough budgetary estimate for implementing the Cisco Connected Stadium Wi-Fi solution in the venue that is within plus or minus 20 percent of the actual cost.

Cisco Connected Stadium Wi-Fi High-Level Assessment Service

This service takes the budgetary assessment service to the next level and includes an onsite review along with a site and needs assessment. Beyond understanding the venue's requirements, a key component of this service is understanding the design of any current WLAN implementation, the physical challenges of mounting access points in the venue, and the capacity and capabilities of the existing wired network.

This service includes a walk-through of venue and meetings with the customer to:

- Review requirements for the wireless design.
- Determine the required capacity (number of users).
- Identify antenna or access point placement limitations. Perform a physical walk-through and visual inspection of physical plant, operations, and wireless network requirements. Take note of physical construction within the facility that might affect the transmission and reception of radio signals.
- Create a high-level stadium assessment that includes:
  ◦ Preliminary Bill of Materials of equipment needed for WLAN implementation
  ◦ Description of planned access point design strategy by area type (bowl, concourses, back offices)
  ◦ Review the venue stadium assessment with the customer.

The goal of this service is to gather a sufficient amount of data to create a preliminary design and budgetary estimate for the venue deployment that is within plus or minus 10 percent of the actual cost

Cisco Full Assessment, Design, and Implementation Services

This set of services provides a comprehensive assessment along with design and deployment services for the Cisco Connected Stadium Wi-Fi solution in the venue.

Cisco Connected Stadium Wi-Fi Requirements Discovery Consulting Services

In this service, Cisco Advanced Services engineers conduct a detailed site survey and needs assessment. The engagement begins by working with customer staff to list current and future WLAN requirements in the following areas:

- WLAN client devices, including interoperability and security options
- WLAN network infrastructure management, availability, performance, and scalability
- WLAN services, including location-based services, guest access, and voice over WLAN (VoWLAN)
- WLAN advanced application support, including video over multicast
- Desired coverage levels and areas
- Frequency bands of operation

At the completion of this service, the Cisco engineer creates a detailed Customer Requirements document for the Cisco Connected Stadium Wi-Fi solution.

Cisco Connected Stadium Wi-Fi Architecture Design Consulting Services

In this service, Cisco Advanced Services engineers provide WLAN architecture planning and design recommendations for a secure IEEE 802.11-based WLAN. The report includes recommendations for availability, security, management, performance, interoperability, and scalability.

Cisco Network Consulting Engineers work with customer staff to review the existing network architecture and infrastructure and analyze their readiness to support WLAN services. Areas assessed include existing and planned:

- Security infrastructure, such as VPN concentrators, RADIUS servers, external authentication databases (for example, Microsoft Active Directory, Windows NT, and Lightweight Directory Access Protocol [LDAP])
- Wired network infrastructure design and implementation
- Network management infrastructure
- Client management processes

At the completion of this service, the Cisco engineer creates a *WLAN High-Level Design Report*, which includes:

- WLAN architecture diagram and recommendations
- WLAN security recommendations
- Required signal strength / signal-to-noise ratio design levels
- Required data rates, target throughput, and desired availability
- Capacity requirements (number of users)
- Network management recommendations
- Software release recommendations for access points
- Client device recommendations

Cisco Connected Stadium Wi-Fi Detailed Design Development Service
In this service, Cisco Advanced Services engineers collaborate with the customer to develop specific configuration templates for critical WLAN networking infrastructure devices. The engagement begins by working with the customer staff to develop detailed plans and configurations. Design elements to be considered include:

- Security infrastructure
- IP addressing scheme
- Switching and routing infrastructure
- IP Multicast scheme
- Wired and wireless backhaul design
- Network management infrastructure

At the completion of this service, the Cisco engineer creates a WLAN Detailed Design Report, which provides detailed configuration recommendations.

Cisco Connected Stadium Wi-Fi Detailed RF Design Service
In this service, Cisco Advanced Services engineers perform an RF site survey for planning the location of access points in a WLAN network that will support solutions such as secure mobility, voice over wireless LAN (VoWLAN), 3rd Generation/4th Generation (3G/4G) offload, and Cisco Stadium Vision Mobile.

This service begins with a physical walk-through for an intensive, onsite verification and validation process. The walk-through includes a visual inspection and measurement of physical plant, operations, and wireless network requirements. Cisco Advanced Services engineers take note of any physical construction within the facility that

might affect the transmission and reception of radio signals. This includes the installation of other wireless communication devices such as cordless phones, cameras, or monitoring systems, and evaluation of the physical environment to document mounting, powering, and potential interference.

Cisco Advanced Services engineers scan for other significant WLAN networks or major sources of non-802.11 interference in the band. The engineers place RF transmitters within the customer's facility to test propagation characteristics, coverage area, and signal quality. They then provide an access point placement and coverage diagram in relation to the buildings' overall footprint.

At the completion of this service, the Cisco engineer creates:

- A complete Bill of Materials indicating the equipment needed for the WLAN implementation.
- Wi-Fi Site Survey Report, which includes:
  ◦ Physical locations of access points
  ◦ Antenna type/location/orientation
  ◦ Any special mounting or cabling recommendations
  ◦ Recommended access point power / channel settings
  ◦ Any known or measured sources of interference
  ◦ RF/WLAN design assumptions and caveats

Cisco Unified Wireless Network Configuration Support Service
In this service, Cisco Advanced Services provides remote support for the configuration of WLAN security, WLAN controllers, and the Cisco Prime Infrastructure system. The remote support helps to resolve configuration issues and provides troubleshooting assistance during normal hours of business.

This service includes:

- Assessment of gaps between the customer's technical design requirements and configuration specifications, according to Cisco best practices.
- Recommended changes to WLAN configurations to allow for optimal WLAN implementation and performance.
- Evaluation of customer's network documentation and existing WLAN configuration information against Cisco leading practices and the customer requirements and existing network infrastructure.
- Remote WLAN configuration guidance.

Data Collection Services
This set of services is performed after the deployment of the Cisco Connected Stadium Wi-Fi solution. These services are intended to help ensure the optimization of the solution.

Cisco Connected Stadium Wi-Fi Testing Service
In this service, Cisco Advanced Services engineers provide an assessment of the architecture, operational status, and security of the implemented WLAN technology and mobility applications to validate the implementation meets the customer's requirements for availability, security, and reliability as documented in the WLAN Detailed Design.

At the completion of this service, the Cisco engineering team creates a WLAN Testing Document that includes the test results and recommended changes.

Cisco Connected Stadium Wi-Fi Network Validation/Data Collection Service
In this service, Cisco Advanced Services engineers perform a survey of the RF environment for coverage, interference, and general performance after WLAN access point installation and network configuration. As part of the service, a team of WLAN specialists, for onsite and remote WLAN RF network assessment support, will collect data using appropriate WLAN data collection and analysis tools to assess coverage and interference.

Cisco HD WLAN Network Tuning Service
With this service, Cisco analyzes the data collected to determine suggested changes to the network. In addition, an overall evaluation of the WLAN network capacity is provided.

At the completion of this service, the Cisco engineer creates a WLAN Network Verification Report document, which includes the measured RF coverage, any recommended changes, and any known or measured sources of interference.

Cisco Connected Stadium Wi-Fi Event Support
With this service, Cisco provides event planning prior to the event, to prepare in advance for the operational aspects of the event, followed by event-day monitoring and troubleshooting support. After the event, the Cisco team provides a post-event summary and documents lessons learned.

At the completion of this service, the Cisco engineer creates a WLAN Event Summary Report, which includes key metrics, a troubleshooting summary, and main lessons learned.

For More Information

For more information about Cisco Wireless Services, the Cisco Connected Stadium Wi-Fi solution, or other Cisco Connected Sports solutions, contact your Cisco account representative today and learn how you can use the power of the network to transform your sports and entertainment venue.

http://www.cisco.com/go/sports

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